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From: Peter Butler
Sent: Wed 3/5/2014 10:49:38 PM
Subject: FW: Scope of Work for Pilot Test Scoping Study
Proposal for Pilot Test Scoping Study Passive Treatment for the Upper Cement Creek Drainage
11142013.pdf

Dear Technical workgroup – At the last ARSG meeting, there was a lot of support conceptually for the AMEC proposal (See below and the attachment.), however, there were some questions as to the scope of the initial work and if there are ways to reduce some costs. Also, what are the deliverables we are getting for our money.

There is a strong desire to get pilot project on the ground before next winter, but we currently don't have a funding source for the pilot. We could use money Sunnyside Gold gave us a couple of year ago for the scoping study, but it wouldn't really get us any farther than that.

One other alternative is to put less resources into the scoping study, especially with regard to overall project goals as Ron outlined in the first main bullet below since people may not be ready to define project goals yet, and put more resources into a bench-scale test of American Tunnel water. This was the water source that we have previously identified as where we thought we should start.

It was also noted at the last meeting that there are other firms out there that do wetland work, and we will be getting the InnoCentive responses and having a brainstorming session within a month. So do we want to engage AMEC right now?

Please email any thoughts you may have. If I don't get much of a response, we may schedule a meeting to hash out some of these issues.

Peter Butler

Personal Phone/Ex. 6

From: Borrego, Ron [mailto:Ron.Borrego@amec.com]
Sent: Wednesday, February 19, 2014 6:45 PM
To: Peter Butler
Subject: Scope of Work for Pilot Test Scoping Study

Peter,

I am providing this email to further present the scope of work presented in the proposal to Kinross Gold USA dated November 13, 2013. This proposal was provided to initiate the process to determine if passive wetland treatment would be a technology that could help the ARSG meet dissolved metal reduction goals in the Animas River Watershed. The proposal outlined a Pilot Test Scoping Study. The on-site pilot test would likely be a one year test and provide data to evaluate the passive wetland treatment approach at the location where the full-scale treatment would occur and would be performed on waters likely to be the target of full-scale treatment.

The process we envision for this project would be:

- Determine project goals in terms of defining the dissolved metals reduction
 - Reduction at several mine adits with NPDES permits or,
 - Centralized water treatment and conveying water to a single location for treatment or,
 - Watershed-wide metals reduction measured at a point downstream of treatment and,
 - Levels of reduction expected to make this approach viable
- Bench-scale testing of specific pre-treatment technologies if needed

- Pilot testing of passive wetland treatment to establish the technology is viable (approximately 10 gpm)
- Review of project goals and pilot testing results with regulatory agencies and negotiation of point discharge or watershed-wide metals reduction treatment goals
- Demonstration scale testing, **if needed**, to gather specific data not collected in pilot test to ensure full-scale design will be successful (approximately 50 to 100 gpm), This step may not be needed
- Design, construction and commissioning of full-scale treatment system

In the November 13, 2013 proposal, the work was presented in six tasks.

1. Kickoff Call/Meeting
2. Review Site Data
3. Develop Conceptual Plan for Bench-Scale Testing
4. Develop Conceptual Plan for Pilot-Testing
5. Prepare Conceptual Cost/Schedule for Pilot Test
6. Prepare Written Pilot Test Scoping Study Plan

These six tasks will enable the ARSG and AMEC to meet, define goals for watershed metals reduction, agree on goals for bench and pilot testing, allow AMEC to review site water quality data, and understand seasonal/long-term changes in water quality. This knowledge will give AMEC the information needed to develop plans for bench-scale and pilot-scale testing, and to prepare estimates of cost and develop a schedule for the bench- and pilot-scale testing work.

The proposal included a cost of \$15,800 to perform the six tasks, and that would permit AMEC to meet with the ARSG, understand the challenges of the water to be treated in the context of what the ARSG understands the goals for treatment to be, and be able to develop a complete cost and schedule for the pilot testing work to collect data consistent with project goals.

Information needed from the ARSG would include the following:

- Where treatment system will be located, and what water sources will be treated
- Water quality data for all water to be treated (including temperature at point of sampling) and seasonal and long-term hydrographs for each of those sources

- Goals for treatment (as much as you know at this point), how the goals will be measured and where they will be measured relative to location of treatment
- Land identified for pilot testing, including power availability, any access issues, landowner concerns, etc.
- Land under consideration for full-scale system. Any pilot testing needs to be conceived and conducted with the full-scale system in mind so the correct amount and type of data needed is collected.

AMEC will perform a quick evaluation for the pilot testing site and conceptual evaluation for the full-scale site to determine any risks from storm water flows, seasonal high river water levels, geologic hazards, avalanche hazards, year-round access, year-round air temperatures, accumulated snow depths, sunlight durations during winter months, etc.

I hope this explanation is a helpful addition to the information in the November 13, 2013 proposal, I have attached a copy of that proposal for reference. Please give me a call in the morning if you have any questions regarding our proposed approach.

Ron Borrego, P.E.

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